Inhalation Therapy

ARE YOUR PATIENTS GETTING THE OXYGEN CONCENTRATION PRESCRIBED?

AUTOMATIC CONTROL UNIT DEVELOPED BY O.E.M. CORPORATION

Recent medical research has emphasized the importance of accurately controlling oxygen concentration in oxygen tents.

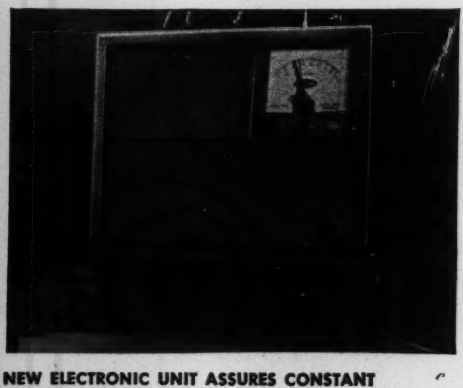
Retrolental Fibroplasia in infants and respiratory acidosis in older patients with pulmonary fibrosis are often caused by indiscriminate use of high oxygen concentrations. On the other hand, high concentrations of 50% to 60% are imperative for many cardiac patients. Research not yet published will point out the need to administer oxygen in controlled dosage like any drug.

CURRENT OXYGEN CONTROL METHODS UNSATISFACTORY

Control of oxygen concentrations in tents has always been difficult, requiring frequent analysis with an oxygen analyzer plus constant adjustment of the flow. Many factors can affect the concentration: Leaks in the tent, poor canopy tucking, inadequate liter flows, failure to use flushing procedures. Even the most elaborate inhalation therapy department cannot afford the necessary technicians to make certain proper oxygen concentrations are maintained.

OXYGEN TENT THERAPY STILL MOST COMFORTABLE

The oxygen tent is the most comfortable method for administering long-term oxygen therapy. There are no encumbering masks, cannulae or catheters to disturb the patient. He retains freedom to move, sit up, talk and eat. Oxygen tent therapy is also the method of choice, or necessity, with delirious patients, in head wound cases and where a modulated temperature is desired during the summer.



NEW ELECTRONIC UNIT ASSURES CONSTANT OXYGEN CONTROL

The O.E.M. Corporation, leader in the development of oxygen tents, has completed a long-term research program designed to solve the oxygen control problem. Result is a new oxygen tent that maintains a preset oxygen concentration automatically, electronically, without attendance.

The desired percentage of concentration is set on a meter—just like the desired temperature. The electronic control unit automatically adjusts the flow of oxygen to maintain the prescribed concentration. This new oxygen concentration control unit, called the O.E.M. AUTOM MECHANAIRE, is perhaps the most imp advance in oxygen tent therapy since th was invented.

HOW THE CONTROL UNIT WORKS

A sample of the atmosphere under the can constantly being drawn into a continuous o analyzer. Every 15 seconds, the concentra monitored. The control unit maintains th centration within a 6% range.

When the monitor finds the concentration the range, oxygen at 40 liters a minute is fl into the tent. There is a visual indicatio oxygen is flushing into the tent. Oxygen con to flush into the unit until the concentrat within the preset range. When the m discovers this, the flow of oxygen drops to a tenance flow of 12 liters per minute... vi indicated on the control panel. If the o concentration rises above the desired maintenance flow is cut off and air is flushe the tent to bring the concentration down.

AUTOMATIC SAFETY VALVE PROTECTS PATIENT

Note that when a lower concentration is de it is not achieved merely by shutting o oxygen flow. On the O.E.M. *AUTOMA* MECHANAIRE, an automatic air safety starts drawing room air into the tent as so the oxygen flow drops below 6 liters per mi There is no danger of carbon-dioxide buil because either air or oxygen in substantial tities is being drawn into the canopy const washing out the carbon-dioxide.

CLINICAL TESTING SHOWS ADVANTAGES

Under clinical conditions, the oxygen centration in a new O.E.M. AUTOMA MECHANAIRE was brought up to 50% room air in 10 minutes by electronic contr comparison, more than an hour was requir bring a tent up to 50% concentration a normal flow rate of 10-12 liters per minute.

The new O.E.M. AUTOMATIC MECH AIRE maintained a 50% oxygen concentr for a 24-hour period under clinical condition the maintenance flow of 12 liters per minute of the time and on the flush cycle only 4% o time. It maintained 60% oxygen concentr under clinical conditions on the mainten flow of 12 liters of oxygen per minute for 90 the time... and on flush for 10% of the Conclusive evidence that the new O.E.M. AU MATIC MECHANAIRE can maintain high centrations of oxygen for therapeutic pur with an economical consumption of oxy

CONTROL UNIT AVAILABLE FOR MODEL #50 MECHANAIRES

The O.E.M. AUTOMATIC MECHANAIR cluding tent and electronic concentration c unit sells for $1,500. The control unit al which fits any model #50 or #55 Mechana is $850. Control units for model #30 Mechan and tents not manufactured by O.E.M. are a able on special order at slightly higher pr

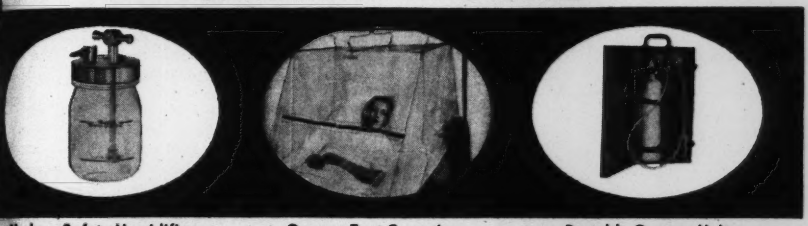
Additional information on the new O.E.M. TOMATIC MECHANAIRE may be obtaine writing O.E.M. Corporation, East Norwalk, C

HUDSON

OXYGEN THERAPY EQUIPMENT

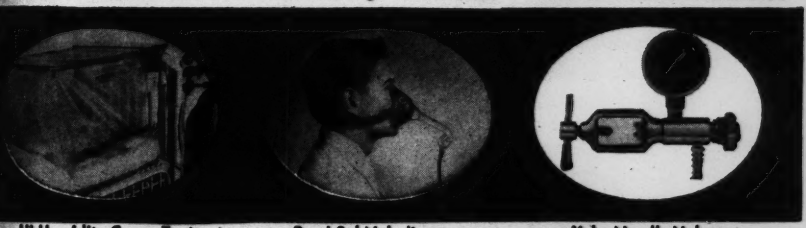
POPULAR ITEMS FOR THE PHYSICIAN'S OFFICE AND HOSPITAL FLOOR

DISTRIBUTED EXCLUSIVELY THROUGH THE DEALER



Hudson Safety Humidifiers | Oxygen Tent Canopies | Portable Oxygen Units

Plastic Nasal Cannulae | Masks For High Concentration | Masks For Medium Concentration

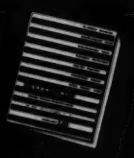


Hi-Humidity Croup Tents | Pen-I-Sol Nebulizers | Yoke Needle Valves

HUDSON

Oxygen Therapy Sales Company
2801 Hyperion Avenue
Los Angeles 27, California

Send for copy of the new Hudson No. 18 Catalog



prescribe DeVILBISS for EFFECTIVE AEROSOL THERAPY

Abundant evidence attests to the therapeutic efficacy of DeVilbiss aerosol therapy equipment in the treatment of bronchial asthma, chronic bronchitis, bronchiectases and other respiratory problems.

DeVilbiss nebulizers produce particles of suitable and effective size to reach all recesses of the lungs and bronchi.

When you prescribe Aerosol Therapy for your patient, prescribe DeVilbiss Nebulizers . . . there are models available for continuous, intermittent or occasional treatment periods.

Since 1888 three generations of physicians have used and prescribed DeVilbiss products

THE DEVILBISS CO. • SOMERSET, PA., BARRIE, ONTARIO, CANADA

VOL. 4 NO. 4

inhalation therapy

DECEMBER 1959

ARTICLES

REGULAR FEATURES

JOURNAL OF THE AMERICAN ASSOCIATION OF INHALATION THERAPISTS

EDITORIAL OFFICE
260 Crittenden Blvd.
Rochester 20, New York

Editor
JAMES F. WHITACRE

Managing Editor
ALBERT CARRIERE

Staff Artist
ROSEMARY F. YOUNG

ASSOCIATE EDITORS

DON E. GILBERT
Ann Arbor, Michigan

JACK SANGSTER
Montreal, Quebec

SISTER YVONNE
LaCrosse, Wisconsin

PRODUCTION OFFICE
332 South Michigan Ave.
Chicago 4, Illinois

Production Manager
DAVID MARSHALL

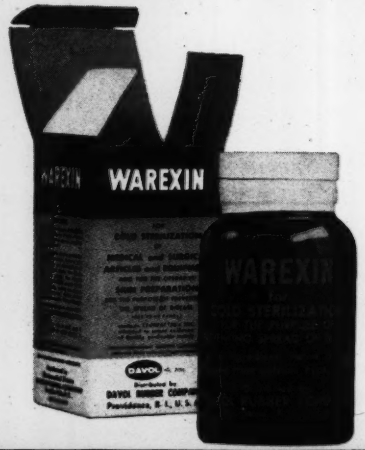
ADVERTISING REPRESENTATIVE
Samuel N. Turiel & Associates, Inc.
430 North Michigan Ave.
Chicago 11, Illinois

Established 1956 and published quarterly at 332 South Michigan Avenue, Chicago 4, Illinois. Single copies $1; subscriptions $3 per year to non-members in the United States and Canada, $4 elsewhere; $2 to members (included in dues).

ARE YOU ACHIEVING TRUE COLD STERILIZATION?

WAREXIN*

IS LETHAL TO—*FUNGI, BACTERIA, VIRUSES, RESISTANT SPORES*—IN LESS THAN 1 HOUR—AND YET IS NON-TOXIC!



*WAREXIN: Clorpactin (a group of hypochlorous derivatives) to which buffers have been added for stability.

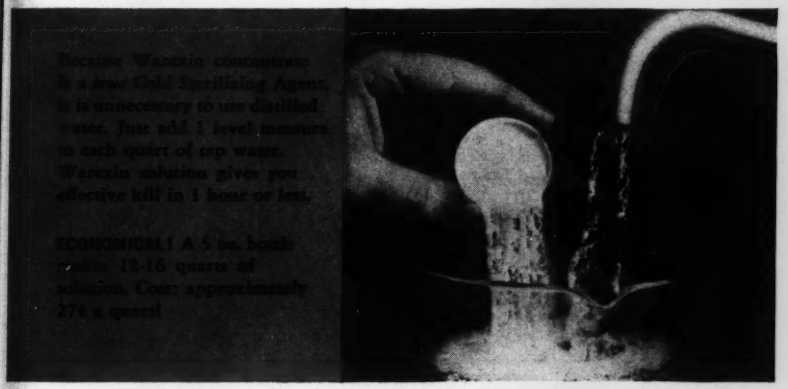
PREVENT CROSS-INFECTION!

Sterilize with **WAREXIN**

Can safely be used for:

1. All instruments made of stainless steel or other widely used corrosion-resistant alloys—even fine stainless hypodermic needles.
2. Articles made of rubber, plastic, non-porous fibers, glass, porcelain, enamel.
3. Complex equipment such as anaesthesia apparatus, heart-lung machines, artificial kidneys, etc.
4. Containers such as colostomy bags, urinals, air filters.
5. Special surfaces: hospital and laboratory walls, floors, tables.

MIX WITH ORDINARY TAP WATER



DAVOL RUBBER COMPANY
PROVIDENCE 2, R. I.

Lattimer, John K., and Spirito, A. L.: Clorpactin for Tuberculosis cystitis: Instrument sterilization, *Journ. of Urology*, Vol. 73, No. 6, June, 1955. • Wolinsky, E., Smith, M. M. and Steenken, Wm. Jr., Tuberculocidal Activity of Clorpactin. A New Chlorine Compound, *Antibiotic Medicine*, 1:382-384, July, 1955. • Sanders, Murray and Soret, M. G.: Virucidal activity of WCS-90, *Antibiotics and Chemotherapy*, Vol. V, No. 11, Nov. 1955. • Gliedman, M. L., Lt. (MC) USNR, Grani, R. N. Capt. (MC) USN, Vestal, B.L., B.S., and Karlson, K. E., M.D.: Impromptu Bowel Cleansing and Sterilization, *Surgery*, 43:282-287. • From The Textbook, Extracorporeal Circulation, Edited by Dr. J. Garrott Allen, Page 87; Charles C. Thomas, Publisher.

ONLY MIST O_2 GEN offers all these advantages in a Cold Mist-Oxygen Tent.

BETTER FOR THE PATIENT:

- No condensation drip. Although the atmosphere is super-saturated with aerosol, the patient remains dry.
- Nebulizer is outside tent where it can be serviced without disturbing patient.

EASIER FOR THE NURSE:

- When folded, the lightweight unit is easily carried and requires only 8 inches of shelf space in storage.
- Zippers placed for easy access.
- Comes with either open top or closed canopy. Both models provide generous tuck space.
- The Mist O_2 Gen Cold Mist-Oxygen Tent can be used for both adult and pediatric patients.

Specify MIST O_2 GEN Respiration Therapy Equipment. For the Mist O_2 Gen dealer nearest you, write:

MIST O_2 GEN

EQUIPMENT COMPANY

MO-108

2711 ADELINE STREET · OAKLAND 7, CALIFORNIA

ALEVAIRE® aerosol therapy in the hospital

— nontoxic mucolytic mist —

acute catarrhal croup

CASE REPORT*

D.D., a 2 year old male with fever, cough and laryngeal stridor of one day's duration, was hospitalized because of continued respiratory distress. Treatment had consisted of penicillin, injections and wet vapor inhalations.

Auscultation on arrival revealed harsh breath sounds on both sides and coarse rhonchi. Continuous crouping cough caused severe respiratory distress; the pharynx was injected and the tonsils were large. Diagnosis was acute catarrhal croup.

The child was placed in a croup tent with a humidifier, and antibiotics were administered. The condition did not change and Alevaire aerosol was begun in the evening. The cough gradually became easier and less frequent. The next day he rested comfortably, his temperature was reduced, no respiratory distress was noted, and the lungs were almost clear on auscultation. A day later no further therapy was required and the child was discharged on the fourth day after admission.

*Smessaert, Andre; Collins, V.J.; and Kracum, V.D.: *New York Jour. Med.*, 55:1587, June 1, 1955.

ALEVAIRE

has been dramatically effective in:

- neonatal asphyxia (due to inhalation of amniotic fluid, mucus obstruction, atelectasis)
- croup • laryngitis • tracheobronchitis
- pertussis • pneumonia • bronchial asthma
- emphysema • bronchiectasis • lung abscess
- pneumoconiosis • smoke, kerosene poisoning
- poliomyelitis (respiratory complications)
- routine oxygen therapy • tracheotomy
- prevention of postoperative pulmonary complications

Alevaire is supplied in bottles of 60 cc. for intermittent therapy and in bottles of 500 cc. for continuous inhalation therapy.

Winthrop LABORATORIES
NEW YORK 18, N. Y.

Alevaire, trademark reg. U.S. Pat. Off.

A 5-year-old Grows Up!

ANY ORGANIZATION—business, fraternal, professional—that wants to thrive in our competitive society must plan for the future. Such planning, to be effective, must be on a long-range basis, and it must, of course, benefit the association.

I want to describe to you our future plans for INHALATION THERAPY, this five-year-old infant which is the symbol of your association.

As you know, when we started this Journal, it was a quarterly, as it is now. Because of certain budgetary and editorial limitations, it was started as a 6" x 9", 32-page magazine.

During the first two years of its life, our chief problem was to get significant articles and to sell advertising. With the help of many of you, and the purchase of space by interested companies, INHALATION THERAPY struggled along during its infancy.

All this time we were observing, experimenting, learning. We made mistakes. We corrected them. We made other mistakes, and corrected them. In the beginning, the magazine lost money —quite a bit.

Slowly, surely—sometimes maddeningly—a pattern began to emerge. We changed advertising agencies. We talked to hundreds of people and asked for their ideas about the kind of journal which the AAIT should have. Therapists, doctors, nurses, administrators, advertisers—all were helpful. Finally, after due and careful consideration, we arrived at a pattern for the future of INHALATION THERAPY.

To begin with, starting with the first issue next year, INHALATION THERAPY will no longer be a quarterly. Instead it will appear six times a year: In February, April, June, August, October and December.

Another improvement we are making is one that was influenced by the production needs of our advertisers. This is a

change in size, from its present 6 x 9 inches to a 7 x 10 inch magazine. This 7" x 10" size is a more acceptable size for paramedical journals, and will be more convenient for the companies who take space in our magazine, since more advertising plates are standardized at this larger size.

Numerous advantages are to be derived from these changes. For the members, a bigger magazine will of course contain more information. We shall be able to use longer articles, and more and larger illustrations. Too, the more frequent appearance of the magazine will mean a shorter wait between issues, and a greater impact on the people whom we wish to reach.

It also will mean a lot more work for the editor and his staff, as well as for the production workers at headquarters. It will mean a greater search for writers on subjects pertinent to inhalation therapy.

It is my hope that this forward step will have your unrestricted support, and that each one of you will give serious thought to making your contribution to this Journal. Whether it be by writing an article about some local phase of inhalation therapy, or whether it be simply to notify the staff about potential sources of material—it does not matter.

The important thing is that you consider this Journal a professional symbol of which you can be proud.

—**Albert Carrière**

Too much oxygen can be just as bad as too little

by Rebeca Gerschman, Ph.D.

RADIATION, we know, is bad for us. Tumors are worse. Therefore, we use radiation anyhow, but no more than is absolutely necessary to alleviate the condition.

The maxim "the more the better" is as bad a one for oxygen as it is for radiation or other drugs; and the purpose of this article is to make us just a little more aware of the fact that unlimited quantities of oxygen for extended periods are definitely unwise. If your patient is thirsty, it is not necessary to throw him into a lake to quench his thirst. Similarly, why give 100% oxygen if 40 or 50% will relieve him?

Exposure to unphysiologically high tensions of oxygen causes irreversible damage to living matter. The problem of oxygen toxicity has become increasingly important in clinical medicine and in submarine and space medicine. Retrolental fibroplasia, a disease which produces blindness in premature infants, has been implicated by us and by others as being produced by increased oxygen tensions. We have found that prolonged exposure to moderately increased oxygen tensions inhibited growth of mice[1] and decreased the division rate of protozoa.[2]

Reports describing deleterious effects of oxygen have been in the literature ever since the classical experiments of Paul Bert[3]. Priestley himself (the discoverer of oxygen) commented in 1775:

"A moralist, at least, may say that the air which nature has provided for us is as good as we deserve."

In spite of these observations, and because of the lack of fundamental knowledge concerning this problem, the indiscriminate use of oxygen has led to regrettable consequences.

Energy for our life processes is derived from the oxidation of carbohydrates and other substances in

Dr. Gerschman is assistant professor of physiology at the University of Rochester (New York) and a world authority on oxygen toxicity.

our cells. The atmospheric oxygen is combined with these fuels by means of an elaborate and intricately controlled enzyme system operating in tissue respiration.

If molecular oxygen as we find it in the atmosphere were a rapid oxidizing agent, it would react too quickly with fuels to permit the storage of energy. Hence the fact that it is a sluggish oxidizing agent is what permits its use as a potential energy source. It is thought that the reason for this sluggishness is that its very high oxidizing potential is reached only by activation of the oxygen molecule to the free radical state. Recent work has established that such free radical states of oxygen (there are several) do occur in the course of enzymatic activity in normal metabolism, but normally only in very small amounts. It is suspected that higher than normal partial pressures of oxygen in the inspired air may cause an increase in the number of free radicals present in the tissues.

Has the ability to react

Since oxygen has such a high oxidizing potential in this free radical state, it has the ability to react with many substances. In the presence of sufficient quantities of free radicals (which, depending on overall conditions in the system at the time, may be extremely small), uncontrolled oxidations (chain reactions, propagated reactions) can be started. These uncontrolled oxidations involve more than the fuels intended for energy production; they include cellular constituents as well. This means that enzyme systems become deranged, giving rise to a multitude of diffuse and serious difficulties which may be irreversible and incapable of treatment. Also, the genetic material of the cell is affected, producing mutations and changes in growth and development. It is of interest to note that similar effects also can be produced by irradiation.

Oxygen accumulated later

Primitive organisms did not have this problem, because oxygen in the atmosphere accumulated only later during the evolution of our atmosphere. Hence, they had no need for anti-oxidant mechanisms. Some of our most primitive life forms today —the so-called anaerobic bacteria— still do not have them, and consequently cannot live in air because of the oxygen present.

But the more complex multicelled organisms have more elaborate metabolic processes which enable them to store energy from oxidative processes. However, this convenience has brought with it the necessity for living matter to produce defenses against uncontrolled oxidations.

Anti-oxidant substances are chemicals possessing ability to curtail oxidations. Many factors play on the chemical reactions taking place under actual metabolic conditions, making it extremely difficult to predict whether a given substance will act as an anti-oxidant or a pro-oxidant. We have certain empirical observations which tell us what to expect under those particular conditions only. Extrapolation of these data to other circumstances is therefore difficult and rather speculative.

Thus it is that a substance like glutathione protected mice against 6 atmospheres of oxygen, but not against 1. Other anti-oxidant sub-

continued on next page

continued from page 13

stances are vitamin E, ethyl alcohol, cysteine, cysteamine, thiourea and cobalt.

Although the cell may "buffer" against the destructive tendency of oxygen, it seems unlikely that the anti-oxidant defense will be complete. In an analagous way, we can think of acid-base buffers, which can *resist* but not completely prevent the changes in pH caused by acids or bases.

We are inclined to think that the toxicity of oxygen is a continuum. What is considered a normal concentration (air) is what we are prepared for with our anti-oxidant defenses (i.e., "is as good as we deserve"). It is plausible that a continual small "slipping" in the defense could be a factor contributing to ageing and death, and in this sense one might consider that there is no threshold tension necessary for the appearance of the toxic effects of oxygen.

Ageing is a progression

A recent review article[4] concludes that "ageing must be considered as a progression, generally irreversible, of successive metabolic states, each with its own characteristic pattern of enzyme levels." This characteristic pattern can reasonably be expected to be influenced by the oxygen tension present.

In the absence of adequate anti-oxidant defenses, the toxicity of oxygen becomes apparent. Hence, under certain conditions even low partial pressures of oxygen have been shown to inactivate enzymes. It could be expected that above certain oxygen tensions, chain reactions would begin (the anti-oxidants having been used up), and the toxic effects of oxygen would suddenly become more apparent. From our experiments with mice, it would appear that this critical oxygen tension lies between 0.7 and 1.0 atmosphere (i.e., between 70% and 100% oxygen at atmospheric pressure), as judged by the abrupt decrease in their survival time (see Figure). It is also of interest to note that a critical dose of X-rays results in a sudden decrease in the survival time of mice.

Theoretical considerations have led us[5] to relate oxygen toxicity to X-irradiation toxicity, which forms the basis of another modern health problem. Our experimental evidence so far has given support to the hypothesis that free radicals are a common link between the effects of oxygen poisoning and X-irradiation. The anti-oxidants which have protected mice submitted to certain oxygen pressures from oxygen poisoning also have exhibited protective properties for X-irradiated animals.

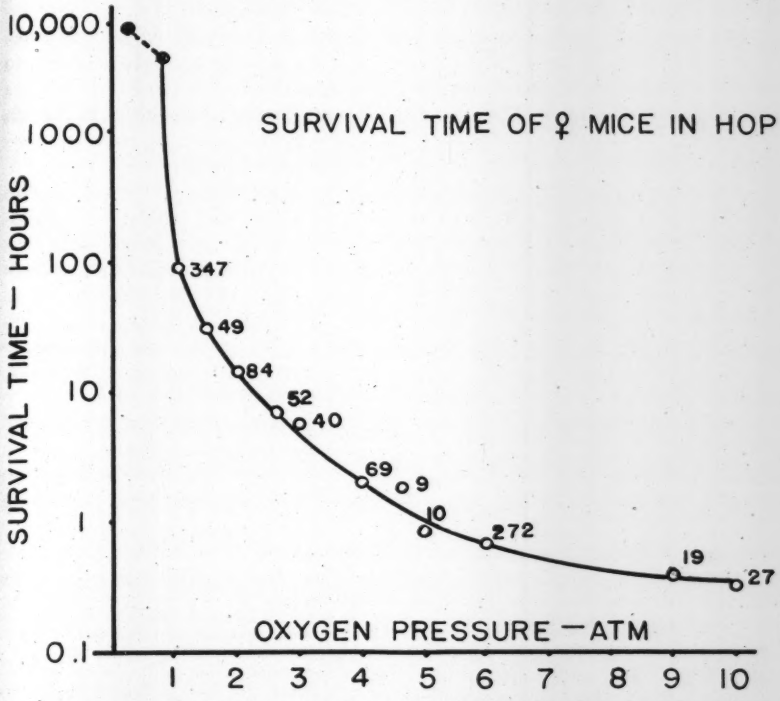
Oxygen has been found to intensify the effects of X-irradiation, and the possibility of deliberately using it to enhance the effects of X-ray therapy of tumors is now being explored by several investigators.

The whole problem of oxygen poisoning and X-irradiation sickness has brought to mind the thought of biological oxidations in general. One can choose to think that in some aspects of these reactions it would be irrelevant whether oxygen is activated by ionizing radiations (X-ray) or by enzymes or other catalysts, so long as its sluggishness is overcome. It could be argued that observed differences in these processes might be mainly quantitative and distributional. Anti-oxidant mechanisms can curtail chain reactions initiated by

either of these routes.

If there is a lack of anti-oxidant defense, then the toxic effects of oxygen may become evident. We like to think that some of the symptoms of vitamin E-deficient animals may be due to the toxic effects of oxygen at 0.2 atmosphere (air)*. Vitamin E-deficient animals also are more sensitive to high oxygen pressures than normal animals. Further, cobalt, which protects mice against 1 atmosphere of oxygen, appears to reverse some of the effects of vitamin E deficiency.

Summarizing, what causes both radiation sickness and oxygen poisoning evidently is uncontrolled oxidations (propagating reactions, chain reactions) in the cells. Prerequisite to this sort of chemical bedlam is the presence of oxidizing free radicals. Normally these exist in sufficiently small quantities that the tissue anti-oxidant systems can retain the upper hand, but such abnormal situations as ionizing radiations or high oxygen tensions



Mean survival times in hours were plotted on a logarithmic scale. The numbers along the curve represent numbers of animals used to determine each of the points. For the 0.2- and 0.7-atmosphere experiments, the median survival time was used. Standard errors are not shown because they are no bigger than the size of a point. Reproduced from *American Journal of Physiology*, 192:563 (1958).

*Vitamin E is an important natural anti-oxidant.

concluded on next page

concluded from page 15

will liberate more free radicals than the anti-oxidant systems can accommodate.

This brings us squarely up against the question, "Are oxygen tensions under 1 atmosphere detrimental to man?" These researches have dealt not only with oxygen under pressures greater than one atmosphere, but with lesser ones. Mice ordinarily live about three years in air. If they are put into 70% oxygen (0.7 atmosphere oxygen), their life span is cut to about four months (shortened by 8/9!); in 100% oxygen, only four *days*. The same relative figures for man would be 70 years, eight years, and three months, respectively. For obvious reasons, these parallel experiments in man have not been performed for confirmation, and the experiments that *have* been done have usually not been carried for long enough periods to show up the effects. However, normal healthy young adults having no heart disease have experienced substernal distress (one of the first signs of oxygen toxicity) after only two or three days' exposure to 100% oxygen at 1 atmosphere pressure[6].

When encountered clinically in the patient receiving oxygen therapy, substernal distress is usually written off as anginal pain, whether the patient was experiencing any before the oxygen therapy was commenced or not. Maybe we need to give more thought to this.

Another symptom consistently and conspicuously found in animals dying of oxygen poisoning is irritation of pulmonary epithelium, leading to pulmonary edema. This too is often present in animals exposed to less than 1 atmosphere of oxygen. Perhaps we need to consider carefully cardiac patients receiving oxygen therapy who develop pulmonary edema, and die in pulmonary edema "in spite of" our valiant efforts to raise the oxygen concentration as high as possible.

Retinal damage not unlike that of RLF has been found in *adult* animals exposed to less than 1 atmosphere of oxygen.

We feel that just because the average duration of high concentration (i.e., 70-100%) oxygen therapy is not long enough to show up some of these evidences of damage in our patients, *that does not mean we should assume no such damage is being caused.*

In conclusion, it should be reemphasized that, just as with radiation therapy, one must pick the lesser of two evils: If the patient needs high oxygen concentrations to tide him over a period of hypoxia, we should not hesitate to give them. But as soon as possible, it is desirable to get back down to more moderate concentrations; and in many instances these will suffice without ever having to subject the patient to the risk that goes with higher ones.

REFERENCES

1. Gerschman, R., et al, "Effect of Various Substances on Survival Times of Mice Exposed to Different High O_2 Tensions," in **American Journal of Physiology, 192**:563, 1958.
2. Gerschman, R., et al, "Sensitivity of Paramecium Caudatum to Oxygen Toxicity as Influenced by Cobaltous and Manganous Ions and Hematoporphyrin," in **Federation Proceedings, 15**:72, 1956.
3. Paul Bert: BAROMETRIC PRESSURE RESEARCHES IN EXPERIMENTAL PHYSIOLOGY, 1878. Translated by M. A. Hitchcock, College Book Co., Columbus, Ohio, 1943.
4. W. E. Knox, et al, **Physiological Reviews, 36**:164, 1956.
5. Gerschman, R., et al, "Oxygen Poisoning and X-Irradiation: A Mechanism in Common," **Science, 119**:623, 1954.
6. Comroe, Julius H. and Dripps, Robert D.: OXYGEN THERAPY, Charles C. Thomas, Springfield, Illinois, 1950. Page 52 et seq.

AAIT makes significant news at annual meeting in Philadelphia

Constitution is revised; first steps are taken toward national registry; Board enlarged; meeting sites chosen

Noble Price elected president; Bernard Kew board chairman

by James F. Whitacre

THE AMERICAN Association of Inhalation Therapists at the Fifth Annual Meeting and Lecture Series in Philadelphia, November 16-20, began to assume the stature of a major paramedical group when it took these significant actions:

1. A revised Constitution and By-Laws was adopted;
2. The first steps were taken toward establishing the American Registry of Inhalation Therapists;
3. The Board of Directors was increased in size from 12 to 15 members; and
4. The Board of Directors chose cities for the annual meetings through 1965 (See page 30).

The meeting also was a milestone in that there were 373 registrants (133 more than last year), thus the largest AAIT meeting ever held. And, charters were presented to three more chapters, bringing the chapter total to 21.

Adoption of a revised Constitution and By-Laws was necessary (a) because of the Association's growth, (b) to incorporate amendments made by the Board of Directors during the first five years, (c) to retain our non-profit, tax-exempt status, and (d) to retain our sponsorship by the American College of Chest Physicians and the American Society of Anesthesiologists.

At the meeting the registrants were told about the new registry, its by-laws and articles of incorporation, and general procedures under which it will operate. The registry will be incorporated early in 1960 and its Board of Trustees then will have its first meeting. This Board is to include three members each from the ACCP, the ASA, and the AAIT.

The development of our professional outlook was advanced by

continued on next page

continued from page 17

talks on: "The Professional Attitude —Does It Apply to Inhalation Therapists?" by Madison B. Brown, M.D., associate director, American Hospital Association, Chicago; "What a Hospital Administrator Expects from an Oxygen Technician" by Howard A. Baker, M.D., administrator, Temple University Hospital, Philadelphia; "Legal Responsibilities of the Inhalation Therapist" by S. Walter Foulkrod, Jr., Philadelphia attorney; and "The Meaning of the Registry" by Vincent J. Collins, M.D., associate professor of anesthesiology, New York University Post-Graduate Medical School, New York City, and chairman of the AAIT's Advisory Board.

Immediate Past President Don E. Gilbert of Ann Arbor, Michigan, gives the president's gavel to Paul Noble Price, Methodist Hospital, Indianapolis, the new AAIT president. Other convention pictures and the list of new officers and directors are on pages 20-21.

Dr. Brown stressed that if inhalation therapists are to be treated as professionals they must act professionally and convince their associates of their dignity, sincerity and integrity as well as their skill.

Dr. Baker said that the therapist "must have completed a properly planned, conducted and supervised technical training program," and have demonstrated his proficiency. The therapist also must "be willing to accept responsibility for fulfilling the obligations of the department to render service to patients and to see that such service is covered at all times without regard to hours or personal convenience."

"He must be willing," Dr. Baker continued, "to *earn* the recognition of other professional groups by demonstrating his competence."

Dr. Baker listed these administrative responsibilities of the therapist: Observing economy, avoiding waste, using manpower and facilities efficiently, protecting the hospital's interest in ordering gases or equipment and in maintaining the latter; keeping records from which the hospital can evaluate the work of the department; and submitting prompt and reliable charges for service.

Regarding the latter, Dr. Baker said:

"Although he must seek to develop and expand the department and increase legitimate income for the hospital, the therapist must feel an obligation to protect the interest of the patients and help to prevent unnecessary or unwise use of gases and unnecessary and preventable building-up of charges for stand-by use of equipment."

Mr. Foulkrod made these points on the legal responsibilities of therapists:

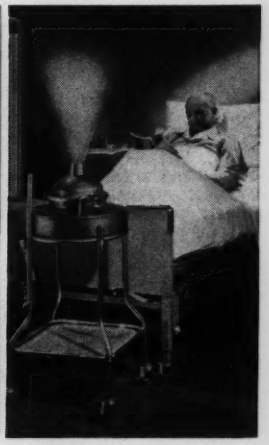
"It is the law of most states that every person owes to every other person coming within the influence of his acts the duty to exercise 'due care' in the performance of those acts. 'Due care' has been defined as that care that a reasonably prudent person would exercise under the

continued on page 24

TRIPLE DUTY...

1. A Portable Bed-Size Fog Room for Children or Adults.

2. For High Humidity Therapy in *Standard* Oxygen Tents.



3. As a Room Humidifier including 4 Bed Wards.

Walton COLD STEAM® HOSPITAL HUMIDIFIER

Unique in concept and capabilities, Walton's Model HA was developed specifically to provide *high humidity therapy* in practically *every medical department.*

Its patented "Centrifugal Atomizer" produces such great quantities of vapor that a tremendously enlarged canopy could be designed . . . big enough to fit over an entire bed, giving the patient — child or adult — complete freedom. It is, in essence, a *portable, storable fog room.*

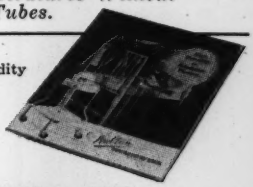
Exclusive Walton features make this unit a necessity in every modern hospital where high humidity is desired for children, adults, in oxygen tents, or in rooms.

MAKES NURSING CARE EASIER, TOO

- *Special 60" Vertical Zipper for Easy Access.*
- *One Filling Lasts 8 to 10 Hours.*
- *Exclusive Walton "Flow-Thru" Feature for Ventilation Maintains Ideal Canopy Temperatures Without Ice, Drain Buckets or Drain Tubes.*

MODEL HA

WRITE FOR FREE 8 page Humidity Therapy booklet and details of Auxiliary Gift Incentive Plan.



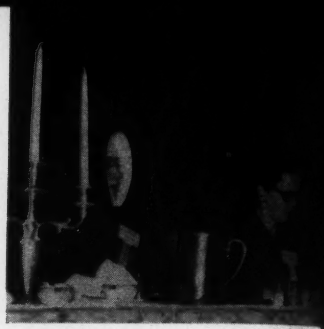
Walton **LABORATORIES, INC.**

DEPT. IT, IRVINGTON 11, N. J.

CHICAGO OFFICE: 549 W. WASHINGTON BLVD., CHICAGO, ILL.

AVAILABLE ONLY THROUGH LEADING HOSPITAL SUPPLIERS

The Committee which studied and reported on the revised constitution included, left to right, Bernard Kew, Joseph J. Klocek, and Larry Ross.



S. Walter Foulkrod, Jr., Philadelphia att... Responsibilities of the Inhalation Thera... Sister Arnoldine, Mrs. Constance Cypert, D...

Walter L. Jones, left, has his comments with Iso Briselli cut short by the photographer.

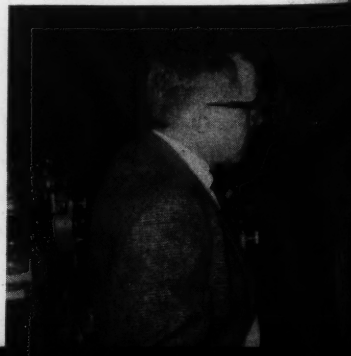
THE NEW 15-M... D...

OFFICERS FOR 1960		ADDITIONA...
President		Chairman o...
Noble Price	1962	Bern... 19
Methodist Hospital		St. A...
Indianapolis, Indiana		Cle...
First Vice President		Sister M. Ar... 1
Joseph J. Klocek, R.N.	1961	St. Joseph H...
Columbia-Presbyterian Hospital		Fort Wayne...
New York, New York		Sister M. Bl... 1
Second Vice President		Good Sama...
Mrs. Leah Tharaldson, C.R.N.A.		Zanesville, ...
Northwestern Hospital	1960	Bruce Boyd... 1
Minneapolis, Minnesota		Jackson Mes...
Secretary-Treasurer		Miami, Flori...
Mrs. Agnes M. Forrest	1960	Mrs. Consta... 1
Edgewater Hospital		Inter-Comm...
Chicago, Illinois		Covina, Cal...

Under the revised Constitution, approved b... membership at the annual meeting, the gover... of the AAIT is vested in a Board of Direct... 15 Members, including: The President, First ... President, Second Vice-President, Secretary-T... urer, the Immediate Past President, and 10 ... Members. The Board chooses its chairman fr... ex...

Milton I. Levine, M.D., New York pediatrician, visits with, left to right, Robert H. Miller, Charles J. Hartlieb, and Ira F. Goden.

Gareth B. Gish, Kansas City, Missouri, an... California, talk over some of the apparat... Companies from coast to coast displayed ...



ia att the group on "The Legal
Thera table, left to right, are:
pert, ble Price, all Board members.

Three of the doctor-speakers taking time out to discuss some of their mutual problems are, left to right: Hylan A. Bickerman, William F. Miller, and Theodore H. Noehren.

15-M F DIRECTORS

ITIONA

	Mrs. Grace M. Farley, R.N. Baylor University Hospital Dallas, Texas	1962
1961	Don E. Gilbert University Medical Center Ann Arbor, Michigan	1961
1961	James Peo, R.N. Delaware Hospital Wilmington, Delaware	1962
1962	Larry E. Ross Baptist Hospital Nashville, Tennessee	1961
1960	Jack Sangster The Montreal General Hospital Montreal, Quebec, Canada	1962
1960	James F. Whitacre University Medical Center Rochester, New York	1960

ed b membership. The four officers' terms of office overn om their election until the election at the irecto nnual meeting; thus they serve for one year. First Board members are elected for three-year ary-1 five being elected each year; thus there is 10 uity on the Board. Figures show when n fro expire as Board members, not as officers.

Home aerosol and suction therapy were discussed by Maurice S. Segal, M.D., of Tufts University.

Charles N. Nadel, left, and Wilbur J. Reid seemed to be enjoying a break in the lectures.

, an yuien, R.N., Duarte,
arat in the exhibit hall.
ed f equipment this year.

Chester C. Lee, Connecticut, and Charles R. Brown, Pennsylvania, examine one of the technical exhibit models. This year there were more exhibitors showing than ever before; 25 companies in 27 booths.

You know they'

Puritan pioneered quick-connect station outlets for hospitals...and more than ten years of continuous, rugged service have proved their ability to provide dependable service under the most exacting conditions and requirements.

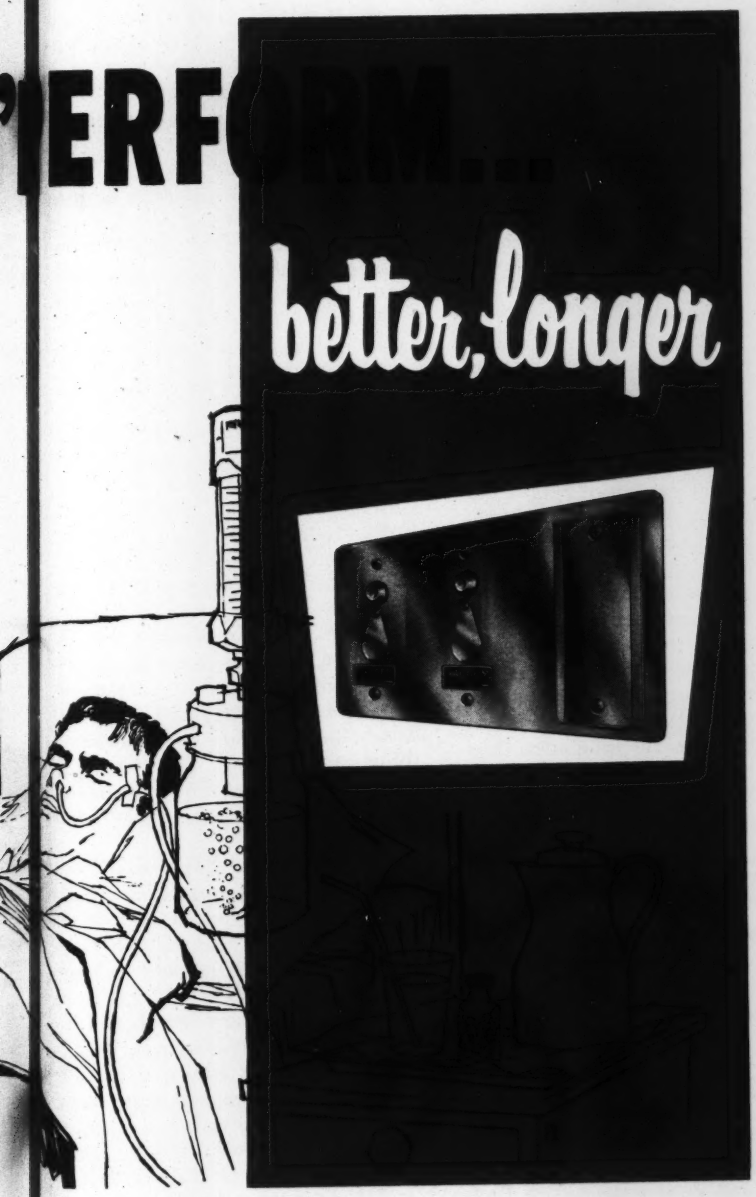
When a customer buys from Puritan, he not only receives the item itself... he also receives close to half a century of Puritan skill, know-how, and experience.

Puritan*

COMPRESSED GAS CORPORATION
SINCE 1913
KANSAS CITY 8, MO.

PRODUCERS OF MEDICAL GASES AND GAS THERAPY EQUIPMENT

Represented in the Far West by
BENNETT RESPIRATION PRODUCTS, INC.
2230 S. Barrington Los Angeles 64, Calif.
A Subsidiary of Puritan Compressed Gas Corp.


ERF
better, longer

continued from page 18

same circumstances. This requisite care applies to the conduct and acts of all natural persons, whether in the practice of medicine or in the practice of inhalation therapy.

"With specific regard to inhalation therapy, the law may be stated that an inhalation therapist is required to possess the degree of skill and learning ordinarily possessed by qualified inhalation therapists, and to use reasonable care and diligence in inhalation therapy.

"The learning required of an inhalation therapist must find its origin in the recommendations of the medical profession and by the recognized manufacturers of equipment and devices used in inhalation therapy. Any departure from these recommendations constitutes the failure to exercise the requisite degree of care.

"Whenever an inhalation therapist, in the practice of inhalation therapy, fails to exercise the requisite care, and such failure is the proximate cause of an injury or aggravation of an injury or malady or a death, then the inhalation therapist is responsible for the damages caused by such failure."

To get a certificate

Dr. Collins stated that the registry will exist to determine whether or not the aspirant possesses the minimum degree of skill and character necessary for the performance of his duties. Certain education, experience and other qualifications will be established, and the candidate will have to pass both written and oral examinations. A successful candidate then will be issued a certificate of registration.

Last year's popular roundtable discussions were repeated at Philadelphia.

There was continued strong interest in "IPPB Techniques," and "Working with the Medical Director"; and particular interest in a new topic, "Gas Sterilization." Participants agreed that gas sterilization was desirable but were concerned about cost.

It was pointed out that despite high initial equipment cost, savings come from lower replacement costs of materials which have been damaged by autoclaving, but are not by gas. And, gas sterilization kills spores whereas chemical disinfectants do not.

Research is personal

Albert H. Andrews, Jr., M.D., attending broncho-esophagologist, Presbyterian-St. Luke's Hospital, Chicago, speaking on "Research Frontiers in Inhalation Therapy," said:

"*You* are the frontiers! It is your observations that are the frontiers. Research is a search after knowledge on a *personal* basis. Try to observe one value while everything else is held unchanging. It is hard in inhalation therapy to hold everything else steady; however, the *attempt* to do so is the most important thing. One at least finds many things that *don't* work."

In his talk on "The AAIT – a Heritage and a Future," Edwin R. Levine, director, department of inhalation therapy, Edgewater Hospital, Chicago, commented that we are giving only about one per cent of the home therapy we should be giving. Another development he expects in the near future is greater observation and care in preventing respiratory problems before clinical symptoms appear.

The discussion of "Resuscitation" by Edwin Emma, M.D., chairman,

concluded on page 26

In chronic respiratory disease...

"With simple exercise, aerosol therapy, and intermittent positive-pressure therapy, many of the diseases now classed as progressive may be slowed—many respiratory cripples may be returned to a useful life."

—Sadove, M. S.: J.A.M.A. 160:876 (March 10) 1956

YOU CAN RELY ON OXYGEN U.S.P. BY

Linde

UNION CARBIDE

Linde Company, Division of Union Carbide Corporation, 30 East 42nd Street, New York 17, N.Y.

"Linde" and "Union Carbide" are registered trade marks of UCC.

concluded from page 24

committee on inhalation therapy, The American Society of Anesthesiologists, Inc., Hewlett, New York, featured the color, sound motion picture "Rescue Breathing" developed at Roswell Park Institute, Buffalo, by James O. Elam, M.D., and his associates.

Warn about airway use

Both Dr. Emma and Dr. Collins (in his talk on "Inhalation Therapy and Its Relation to Anesthesiology") stressed that in using S-shaped double airways in resuscitation, great care must be taken to insert the airway properly to be sure the tongue is not pushed back into the throat. Because of this danger, airway use *only by professional people is approved.* The lay public, fire and police rescue squads, etc., are being encouraged to employ the mouth-to-mouth technique.

Theodore H. Noehren, M.D., assistant professor of medicine, Buffalo (New York) General Hospital, University of Buffalo, in his presentation on "The Clinical Applications of Intermittent Positive Pressure Breathing (IPPB/I)" showed for its world premiere the black and white "work print" of his new color, sound motion picture on this subject.

Discusses physiology

Peter A. Theodos, M.D., assistant professor of clinical medicine, Jefferson Medical College, Philadelphia, presented early in the week a basic discussion of respiratory physiology and anatomy which helped new registrants to understand concepts presented in later lectures.

Hylan A. Bickerman, M.D., associate clinical professor of medicine, Columbia University, Columbia-Presbyterian Medical Center, New York, and William F. Miller, M.D., director, pulmonary division, department of internal medicine, University of Texas Southwestern Medical School, Dallas, Texas, both developed the idea that warm air can contain more moisture than cool air. Dr. Bickerman, speaking on "Heated Aerosols in Diagnosis and Therapy," showed how warm aerosols are used for producing sputum for diagnostic work, and Dr. Miller in his discussion on "Heated Aerosols in IPPB Therapy" described how much better IPPB results are when the gas is adequately moistened by large volume heated aerosol generators placed in the mainstream of the IPPB apparatus instead of at the side.

Describes home aerosol

Speaking on "The Use of Home Aerosol and Suction Therapy," Maurice S. Segal, M.D., clinical professor of medicine, Tufts University School of Medicine, Boston, described specific drugs, equipment and techniques to employ in the therapeutic use of aerosols in combatting respiratory conditions.

Inhalation therapy in pediatrics was dealt with by Robert Denton, M.D., department of pediatrics, School of Medicine, University of Pennsylvania, in his talk on "Practical Aspects of Inhalation Therapy in the Control of Acute Respiratory Diseases in the Pediatric Patient," and by Milton I. Levine, attending physician and director of the children's pulmonary clinic, New York Hospital, New York City, speaking on "Inhalation Therapy in Pediatrics."

Dr. Denton described in considerable detail treatment of cystic fibrosis of the pancreas, and Dr. Levine discussed croup, bronchiolitis, whooping cough, and other entities.

now . . . for the first time . . .
two new oxygen-tent units that are **easy to wash!**

McKesson AQUALORS

Just remove door on top. Then wash the coils with hose or large volume of water!

Don't worry! Large-diameter drains mean quick removal of wash-water.

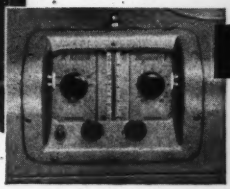
A great convenience to service personnel.

Only McKesson Aqualors have this feature!

100% HUMIDITY MAINTAINED BY THIS MODEL 1150!

Nebulizer is located in bellows-tube connection. Easily removed by service personnel.

STANDARD AQUALOR (Model 1155) is identical to Model 1150, except for High-Humidity feature.



Lighted Control Panel

note oxygen flowmeter (center), temperature and ventilation controls (left and right), oxygen controls (bottom).

McKesson
AQUALOR
OXYGEN TENTS

for full information

write for McKesson Aqualor Brochure!

McKESSON APPLIANCE COMPANY • TOLEDO 10, OHIO

By-pass adapter permits gas to go through meter before humidifier

by Robert Stott

AT OUR hospital the use of high humidity recommended in proper oxygen therapy procedures has resulted in a maintenance problem with our oxygen metering or measuring devices.

Checking with other hospitals in our area, we find that they have much the same problem.

Basically, the And-O-Meters we use are affected by the passage of humidified oxygen through the mechanism, resulting in malfunction of these units. We then are faced with the cost of repairs plus needing additional equipment for replacement.

The method of securing the And-O-Meter to the oxygen apparatus requires the passage of highly humidified oxygen through the meter's clocklike mechanism. Instructions for use of this measuring device say to secure it to the oxygen equipment by a bracket. The humidifier is attached to the base of the flowmeter, and the oxygen from the humidifier is led to the IN port of the And-O-Meter. The OUT port of the meter then conveys the oxygen to the patient.

In an attempt to correct the need for constant drying and repairs to the And-O-Meter, we requested a local supply company to machine a by-pass unit called the Stott Adapter (see diagram). With this adapter, we can interpose a by-pass circuit in the line, so that the And-O-Meter receives only the dry oxygen and the patient receives the direct flow of the moistened gas.

One end of the small and compact adapter is a standard 9/16" threaded female swivel fitting, which attaches directly to the male threaded outlet of the flowmeter. The body has two separate circuit chambers. The upper circuit conducts the oxygen from the flowmeter into the IN port of the And-O-Meter. The oxygen passes through the meter, recording the volume of gas used, and then passes by a short rubber tube into the separate lower chamber of the adapter. The other end consists of

Mr. Stott is chief inhalation therapist at Mercy Hospital, Miami, Florida.

a 9/16″ male oxygen thread to which the humidifier is attached.

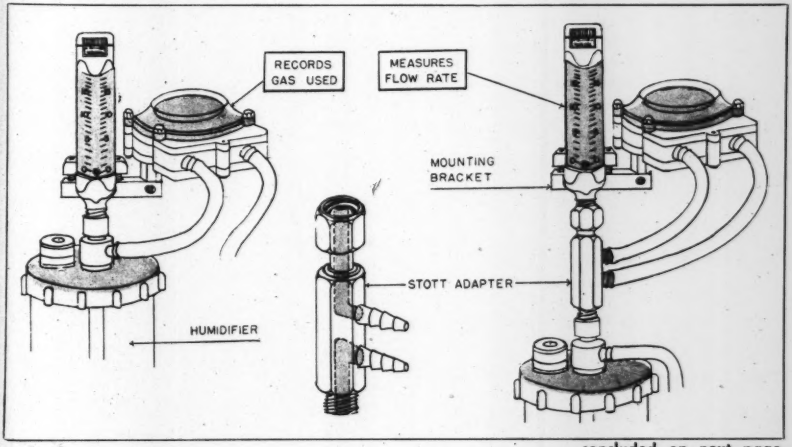
Thus the dry oxygen from the meter passes into the moistening apparatus and then to the patient.

A series of tests showed that the use of this adapter did not interfere with the proper function of the meter, even though it was placed between the source of oxygen sup-

ACCURACY OF AND-O-METER WITH STOTT ADAPTER

TIME	CYLINDER PRESSURE	AND-O-METER READING	AVERAGE RATE OF FLOW FOR THE PERIOD, AS SHOWN BY DIFFERENCE IN CONSECUTIVE AND-O-METER READINGS*	FLOWMETER READING
8:40	2200	2200	——	10 l.p.m.
9:40	2000	2750	9.1 l.p.m.	10 l.p.m.
10:40	1850	3300	9.1	10
11:40	1650	3850	9.1	10
12:40	1500	4350	8.3	10
1:40	1350	4900	9.1	10
2:10	1250	5150	8.3	5 l.p.m.
2:40	1200	5300	5.0	5
3:15	1150	5500	5.7	5
3:45	1100	5650	5.0	5
4:15	1050	5800	5.0	5
4:45	1000	6000	6.6	5
5:15	950	6250	8.3	5
5:45	900	6400	5.0	5
6:15	850	6550	5.0	5
6:45	800	6700	5.0	5 l.p.m.
7:15	750	6850	5.0	5
7:45	700	7000	5.0	5
8:15	650	7150	5.0	5
8:45	600	7300	5.0	5
9:15	550	7450	5.0	5
9:45	500	7600	5.0	5
10:15	450	7750	5.0 l.p.m.	5
10:45	400	8000	8.3	5
11:15	350	8250	8.3	5
11:45	300	8450	6.6	5
12:15	250	8600	5.0	5
12:45	200	8750	5.0	5
1:15	150	8950	6.6	5
1:45	100	9100	5.0	5
2:15	50	9250	5.0	5
2:45	"Empty"	9400	5.0	4
3:15	"Empty"	9450	1.6	3
3:30	"Empty"	9450	0.0	0

*These values were obtained by dividing the difference in consecutive And-O-Meter readings by the time lapse between them.



concluded on next page

concluded from page 29

ply and the moistening agent, rather than the direct method advocated by the manufacturer. For readings at various pressures, the liter flow levels coincided completely with the calculated optimum recovery and pro rata oxygen consumption. (see table.)

Conclusion. Report is made of a simple, inexpensive and readily available by-pass adapter to correct the cost of most repairs and oxygen metering devices. The units are extremely easy to use, and are adaptable to present equipment. More efficient humidified oxygen therapy is possible by use of the Stott Adapter, since the total amount of humidity is directed to the patient, rather than through the And-O-Meter.

CONVENTION CITIES

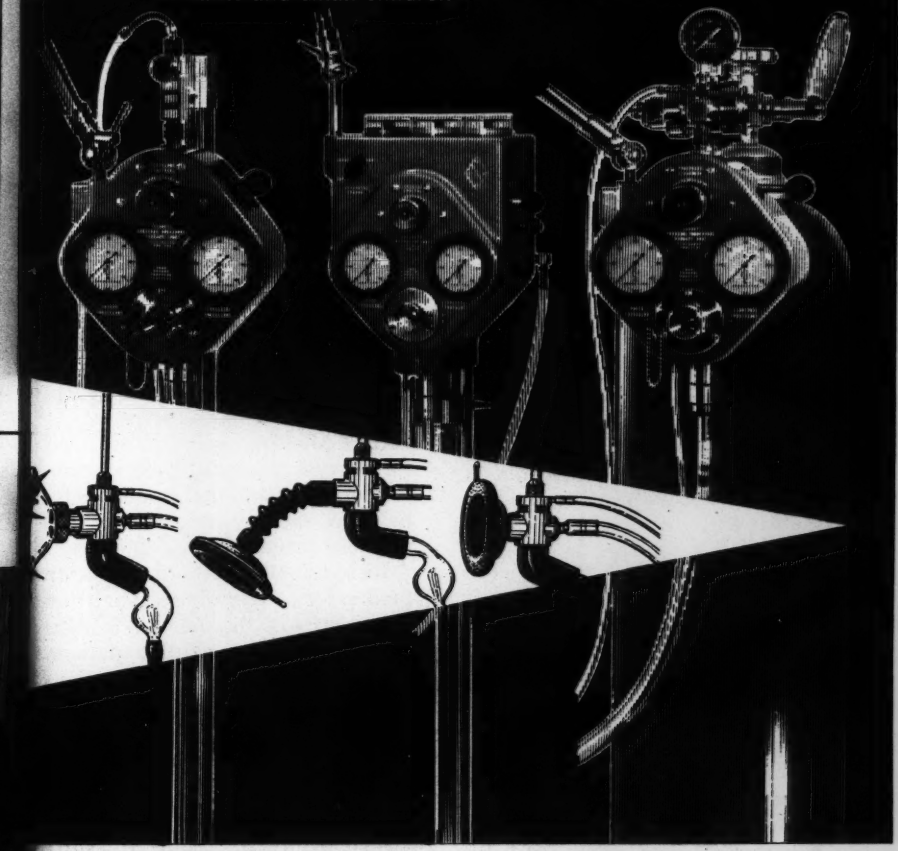
Convention cities for the next six years, chosen by the Board of Directors:

1960	Minneapolis
1961	Buffalo
1962	Chicago
1963	Greater Miami
1964	New York City
1965	Toronto

Although Detroit had previously been chosen by the Board for 1961, no hotel there could accommodate us during the time our meeting usually is held. So Buffalo was chosen with Rochester as an alternate. The Board also chose alternates for 1964 (Boston) and 1965 (Montreal). Greater Miami includes both Miami and Miami Beach.

BENNETT INFANT UNITS

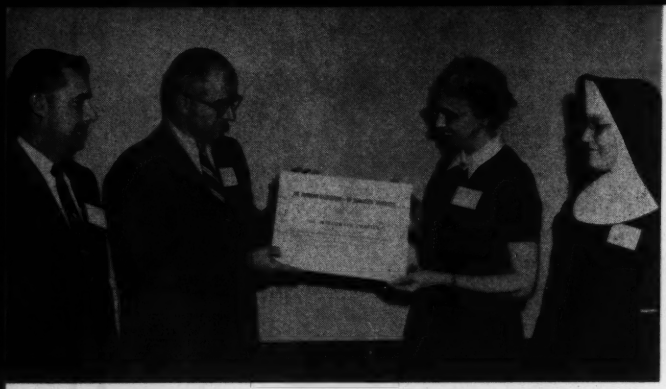
. . . offering the advantages of the incomparable Bennett Flow-Sensitive Valve for treatment of infants and small children



These adaptations of the standard Bennett Pressure Breathing and Respiration Units are designed specifically for pediatric use. They feature minimum dead air space, a mobile manifold for use in any position, reduced flow, and interrupted nebulization.

Write for literature or demonstration.

BENNETT RESPIRATION PRODUCTS, INC.
2230 So. Barrington Avenue • Los Angeles 64, California
Distributed East of the Continental Divide by Puritan Compressed Gas Corp.



Miss Dorothy Braeger, R.N., Milwaukee, first chapter president, receives the Wisconsin Chapter charter from AAIT Executive Director Albert Carriere. Others are Ashley Liska, Madison, and Sister Mary Regina, Darlington.

CHAPTER ACTIVITIES

by Jack Sangster

AT THE annual meeting of the **Tennessee Chapter** held at the Mid-State Baptist Hospital School of Nursing in Nashville, these new officers were elected for 1960:

Russell B. Huffman, president; George A. Munn, Jr., vice president; Joe M. Vincent, treasurer. Each is an inhalation therapist at Mid-State Baptist Hospital.

The **Michigan Society of Inhalation Therapists,** at the annual election meeting held at the University of Michigan Hospital, Ann Arbor, elected Jerome Heydenberk, Bronson Methodist Hospital, Kalamazoo, as president.

Other officers elected were:

Miss Wilma Krajec, Mt. Carmel Hospital, Detroit, vice president; Don E. Gilbert, University of Michigan Hospital, secretary; Howard Skidmore, Detroit Osteopathic Hospital, Highland Park, assistant to the secretary; Thomas Lewis, Henry Ford Hospital, Highland Park, board member; and Gordon Vining, St. Joseph Hospital, Ann Arbor, board member.

The **Wisconsin Chapter** received its official AAIT charter at a meeting held in Madison which was attended by inhalation therapists from throughout the state.

The day's program had for its theme "Inhalation Therapy and the Cardiac Patient." William Crowley, M.D., and Donald Koepke, M.D., both of Madison, spoke on the need for oxygen in cardiac and respiratory diseases, and post-operative inhalation therapy in cardiac and thoracic surgery.

Richard Bickford of Madison moderated a panel of inhalation therapists who discussed inhalation therapy and the cardiac patient. Panelists were:

Clifford Hall, Milwaukee; Mrs. Eletta Silver, Racine; and John D'Amore, Milwaukee.

At the AAIT annual meeting in Philadelphia, charters were presented to these chapters: **North Texas** (Dallas), **Rocky Mountain** (Denver), and **Washington, D.C.**

The **Western New York Chapter** has embarked on a program of short talks by members at each meeting during the winter. The program is being planned and directed by Donald Summerville, D.D.S., chairman of the education committee.

EDITOR'S CORNER

Records and Reflections

BESIDES furnishing vital data for statistical studies on our hospitals' services, the patients' file cards can tell us much about these people.

Our patients fall into four categories:

1. People having operations who are not otherwise in cardio-respiratory difficulty, and for whom the service is merely to help tide the patient over or prevent post-op complications like atelectasis or pneumonia. Little children who've been intubated and develop croup from the resulting laryngo-tracheal edema also are in this class. These patients usually have only one entry on their cards.

2. Congenital heart or rheumatic heart disease patients who develop mitral stenosis and come in for surgery. If they are lucky, there may be only one admission for these, too. But other coronary patients —the kind who are subject to congestive failure or myocardial infarcts—are repeaters, sometimes several times in one year. Frequently they are in pulmonary edema and require extended IPPB therapy with alcohol or other antifoam agents to break the edema.

3. The asthmatic or emphysematous individuals we get to know as well as our own families, and who are with us nearly as much! One wonders what in the world was ever done for these unfortunates before IPPB came onto the scene!

4. Elderly folk with advanced cancer, strokes, staph pneumonias, or who are just plain worn out (major disorders of several systems, minor ones of several others). These are usually terminal care cases, and are mainly supportive, whether terminal or not.

Groups 2 and 3 are obviously the most challenging and the ones where the inhalation therapist has his chance to shine, because prompt, competent application of good techniques often brings these people out of the woods, whereas unassisted, they are almost certain to die.

Even brief records can show a lot, and it's surprising too, when you look back over them at annual report time, how much your memory will fill in between the lines, and what interesting reflections about the patients are called forth.

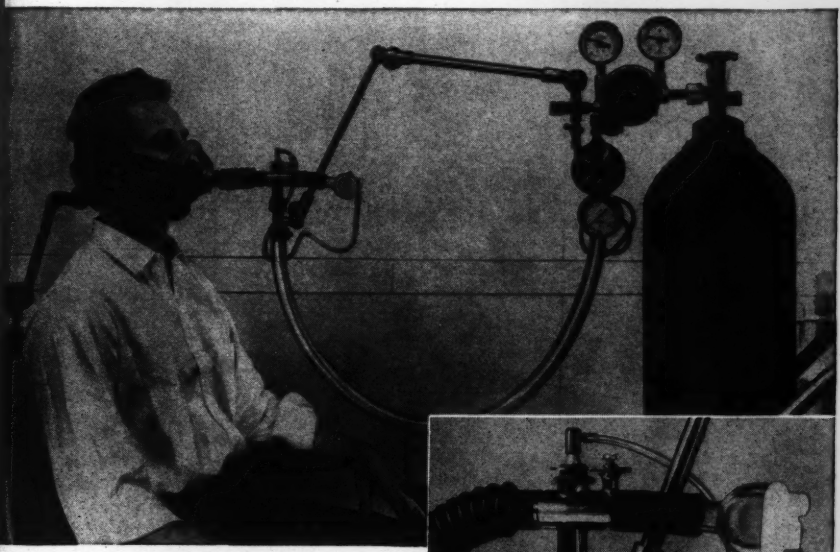
Paramedical Education

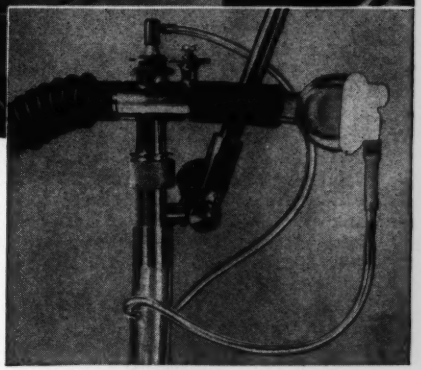
An interesting commentary on the education problem appeared in the February 1, 1959 issue of HOSPITALS (the journal of the American Hospital Association) in an article by Nathan Bushnell III entitled, "Are Educational Standards Too High in the Paramedical Fields?"

While the inhalation therapists are scurrying around trying to get schools and a registry going, other more advanced paramedical specialties have, according to Mr. Bushnell, carried these things to a point which evidently is causing as many problems as lack of education does. They have kept raising their professional standards and then insisting that every member of their associations meet the additional qualifications, until they have wound up with whole fleets of department heads and supervisors, and nobody left to do routine work!

As a paramedical profession, inhalation therapy has a long way to grow before we reach this point, but it's amusing to view this problem which some day could be ours.

For the efficient and simplified administration of I.P.P.B.I. therapy... the improved M-S-A Pulmonary Ventilator... mobile or cylinder model





Note: the new M-S-A Pulmonary Ventilator provides both dilution and 100% oxygen. It is sold only on the prescription of a licensed physician or on the order of properly qualified hospitals and other institutions.

The M-S-A Pulmonary Ventilator provides effective pressure breathing therapy in combination with aerosol therapy.

Clinically proven, this instrument effectively distributes aerosols such as bronchodilators, detergents and bacteriostatic agents throughout the respiratory tract. Equipped with new easy-to-clean, maintenance-free exhalation valve assembly. Operates from either a piped system or an oxygen cylinder.

Ease of operation permits quick, efficient application in hospitals, doctors' offices or in patient's home under physician's directions. Produces dramatic relief for most patients suffering from Emphysema, Asthma, Silicosis and similar diseases. May we *demonstrate* these and other advantages of this unit?

Write for descriptive new bulletin

MSA
SAFETY EQUIPMENT HEADQUARTERS

MINE SAFETY APPLIANCES COMPANY
201 North Braddock Avenue • Pittsburgh 8, Pennsylvania

MINE SAFETY APPLIANCES COMPANY OF CANADA, LIMITED
500 MacPherson Avenue • Toronto 4, Ontario

Every day—in many ways—MSA products safeguard millions of lives

WORTH NOTING

"Clinical Use of a Nomogram to Estimate Proper Ventilation During Artificial Respiration," by Edward P. Radford, Jr., M.D., Benjamin G. Ferris, Jr., M.D., and Bertrand C. Kriete, M.D., in *New Engl. J. Med.* 251:877 (54).

Deviations from proper ventilatory levels have long-term effects that must be kept in mind when giving patients prolonged artificial respiration. The ventilation should be regulated according to the amount of CO_2 to be removed; under most conditions, arterial oxygen saturation will be satisfactory when ventilatory removal of CO_2 is also satisfactory. Normal arterial pCO_2 is about 40 mm Hg; a sustained decrease in ventilation of only 20% may run it up to 60 mm, causing respiratory acidosis and CO_2 narcosis; an increase of this magnitude may bring it down to below 30, which would result in respiratory alkalosis. It is thus evident that some index of the adequacy of ventilation should be employed where any artificial respiration is carried on for more than a few hours.

These authors present a nomogram for predicting the optimal tidal volume from the respiratory rate, sex and weight of the patient. Using this nomogram, one needs only to ascertain the average tidal volume of the patient by means of one of the ventilation meters currently available, and then compare the value obtained with that predicted for the patient by the nomogram. The respirator is then adjusted accordingly.

The main drawback with this system is the "changes in ventilation that may occur when any conscious subject knows that his respiration is being measured." These "probably represent the most important source of error in ventilation measurements."

One must be clearly aware of its limitations to be able to use the nomogram intelligently. It is derived from 3 assumptions: (1) basal CO_2 production may be predicted from the body weight, (2) respiratory dead space also may be predicted from the body weight, and (3) the optimum arterial pCO_2 is 40 mm Hg. The corrections to the nomogram are designed to take certain exceptions into account. For example, both activity and fever raise the basal CO_2 output; therefore, in conditions where basal metabolism is known to be interfered with, the nomogram must not be relied upon.

The paper opens and closes with the admonition that this nomogram is devised to provide ventilation sufficient for CO_2 removal, on the assumption that O_2 needs will automatically be cared for. The point is made that if this is *not* the case, the treatment of hypoxia is *not* to increase the ventilation further (which would lead to blowing off too much CO_2, resulting in alkalosis), but to give oxygen therapy.

"Use of Mechanical Assistance in Treating Cardiopulmonary Diseases," by Frank D. Gray, Jr., M.D. and Albert S. Field, Jr., M.D., in *Am. J. Med. Sci.* 238:146 (59).

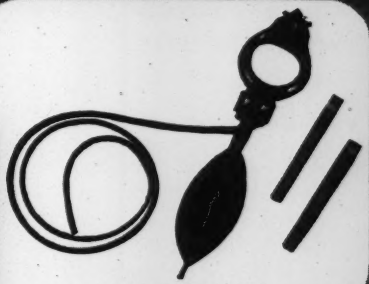
This group, working at Yale University Medical School, was interested in two problems which have commonly beset the therapy of chronic lung disease: Overdistention of the lungs—which many have felt is increased by IPPB—and ineffective action of the diaphragm.

The mechanical aids they tried were (a) a neuromuscular electronic stimulator, with electrodes which could be placed over the diaphragm and over the lower abdomen, and (b) a combination of IPPB (via mouth tube) with an inflatable abdominal belt. These devices were tested on a number of normal subjects and patients, and several things were simultaneously measured: the per cent of CO_2 in the end-tidal air (by continuous infrared CO_2 analyzer), the tidal volume, and the peak velocity of air flow into and out of the lungs.

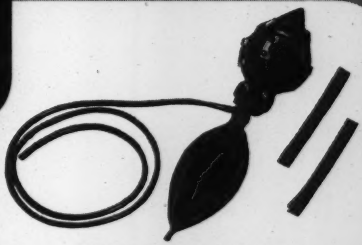
Their findings were that the neuromuscular stimulator, though considerably harder to use, did offer promise in the re-education of long-unused diaphragms of emphysematous patients. Stimulation of the diaphragmatic and abdominal electrodes increased the peak velocity of air flow into and out of the lungs respectively, and increased the tidal volume in nearly all of the 18 normal subjects and in four of the six patients. In the other two the effect was the opposite.

The combination of oral intermittent positive pressure with pressure on the abdomen during exhalation (by means of the inflatable belt) was distinctly beneficial in reducing over-distention and the per cent of CO_2 in end-tidal air. Another feature which was of great help was the lift the belt gave to falling blood pressure in a few patients who went into shock.

OXYGEN THERAPY MASKS



B-L-B Nasal Mask



B-L-B Oronasal Mask

B-L-B Tracheotomy Mask

Laboratory-tested... Hospital-approved

B-L-B PARTIAL REBREATHING MASKS

- Provide high oxygen concentrations at low cost
- Are adjustable to facial contours
- May be easily cleaned and sterilized

K-S DISPOSABLE MASKS

- Available in large and small sizes
- Economical, efficient, comfortable
- May be autoclaved if desired

For further details and prices, please request Catalog 4780.

Small Kiddie Space Mask

Large Size for Adults

"Service is Ohio Chemical's Most Important Commodity"

Ohio Chemical

OHIO CHEMICAL & SURGICAL EQUIPMENT CO.
Madison 10, Wisconsin

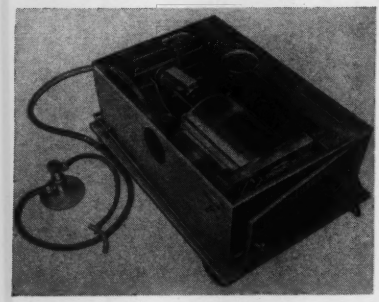
Ohio Chemical Pacific Company, Berkeley 10, Calif.
Ohio Chemical Canada Limited, Toronto 2
Airco Company International, New York 17
Cia. Cubaña de Oxigeno, Havana
(All subsidiaries or divisions of Air Reduction Company, Incorporated)

EQUIPMENT NEWS

(Information and photographs are supplied by the manufacturers or distributors.)

Morch Piston Respirator

The V. Mueller Company of Chicago is the manufacturer of the Mueller-Mörch Piston Respirator, an intermittent positive pressure respirator for tracheotomy cases requiring artificial respiration. The unit



provides a constant stroke volume which may be adjusted from 0 to 3600 ml. It pumps room air or oxygen mixture through a humidifier to the tracheostomy tube, with a specially designed check-valve in the system near the tracheostomy tube to ensure exhalation as soon as the desired stroke volume as been delivered to the lungs.

MORE DATA . . .

. . . can be obtained by mailing this coupon to "Inhalation Therapy," Room 904, 332 South Michigan Avenue, Chicago 4, Illinois.

☐ 441 ☐ 442

Please send data on item checked to:

Name.....

Title.....

Address.....

City.....**State**.....

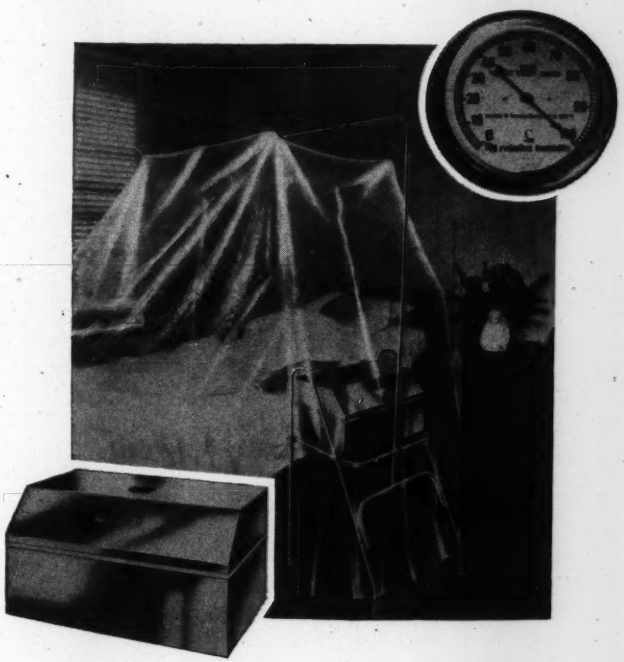
No other respirator which pumps gases under pressure directly into a patient's trachea features a humidifying system of any sort, so this constitutes an important step forward in over-coming undesirable drying of the mucous membrane lining the respiratory tract – a thing which has heretofore been neglected in the design of such equipment.

Since the respirator has sufficient stroke volume to compensate for laryngeal leakage, an uncuffed tracheostomy tube is preferred. The uncuffed Mörch swivel tracheostomy tube delivers adequate ventilation, also prevents excessive pressures in the lungs, and stops secretions from entering the trachea by blowing them toward the mouth where they are easily accessible to the nursing staff. The considerable disadvantages of the cuffed tube are eliminated.

The respirator is easily adjusted by balancing the stroke volume and rate of respiration against the patient's tracheobronchial resistance and pulmonary compliance. **No. 441**

Selas Tent Humidifier

The Selas Corporation of America, Dresher, Pennsylvania, has introduced a new type of humidifier for use in tents. It is a plastic-encased porcelain cylinder which has about 300 million microscopic pores per square inch of its surface. The cylinder is wet with distilled water, and oxygen is forced through the pores to produce moisture particles three to five microns in diameter. This extremely fine fog gives a higher concentration of moisture in the inspired air, whereby liquefaction of secretions is greatly facilitated. The Selas unit is shown here in operation in an Ideal Underbed oxygen tent. **No. 442**



Continental's MARK I *Humidifier*

Model 100

Check these OUTSTANDING FEATURES:

- Produces "Cold Vapor" for alleviation of upper respiratory congestion.
- 100% humidity in minutes with full over bed canopy.
- Ice may be added for cooling.
- 16 hour capacity water reservoir.
- Disposable filter.
- All stainless steel cabinet.
- Silent operation.
- Sturdy free-wheeling stand.

CONTINENTAL HOSPITAL INDUSTRIES, INC.

Box 2 • 18624 Detroit Ave. • Lakewood 7, Ohio

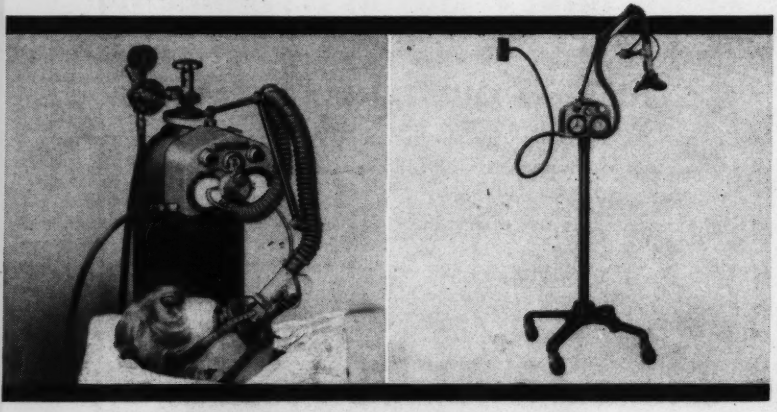
VENTALUNG

TRADEMARK

for Intermittent Positive Pressure Breathing wherever it is needed

The Monaghan VENTALUNG provides I. P. P. B. therapy where dyspnea, chronic loss of pulmonary function, inadequate ventilation or apneic conditions are present. It can be used with cylinder oxygen or piped oxygen systems and administered with face masks, mouthpieces or tracheotomies, either with continuous or intermittent nebulization. Auto-cycler device (an accessory) makes the VENTALUNG automatic for use on post-operative patient unable to breathe spontaneously.

VENTALUNG is a precision instrument designed and manufactured with the same high standards of engineering and materials found in all NCG products. Now distributed exclusively through any of the 59 Medical Sales and Service Offices of NCG . . . an office or branch in every principal city. Contact the one nearest you today.



At left, VENTALUNG with Auto-cycler used with cylinder oxygen.
At right, VENTALUNG on carrier for use with piped oxygen.

9105

NCG® NATIONAL CYLINDER GAS
Division of CHEMETRON CORPORATION
840 North Michigan Ave., Chicago 11, Ill.

CHEMETRON